

REMARKS

This is in response to the Office Action dated August 26, 2008. In view of the foregoing amendments and following representations, reconsideration is respectfully requested.

By the above amendments, claims 12-22 are cancelled and replaced with new claims 23-33. The new claims are supported at least by the originally filed claims. For example, new independent claim 23 includes the limitations of claims 12, 13, 15, 17 and 20. Accordingly, claims 23-33 are currently pending in the present application.

Initially, filed concurrently herewith, is an "Information Disclosure Statement". The Examiner is requested to kindly acknowledge the filing of the IDS.

Next, the specification and abstract have been reviewed and revised in order to make a number of minor clarifying and other editorial amendments. To facilitate entry of the changes, a substitute specification and abstract has been prepared. No new matter has been added. Also enclosed is a "marked-up" copy of the original specification and abstract to show the changes that have been incorporated into the substitute specification and abstract. The enclosed copy is entitled "Version with Markings to Show Changes Made."

Next, on pages 2-4 of the Office Action, claims 12-22 are rejected over the prior art. Due to the cancellation of claims 12-22 and the presentation of the new claims, it appears that the most relevant rejection is that of claim 15. In particular, claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moreno (U.S. Patent No. 4,122,934) in view of Nordtvedt (US 4,595,074). It is submitted that the present invention, as embodied by the new claims, now clearly distinguishes over the prior art of record for the following reasons.

The present invention, as defined in new independent claim 23, requires, *inter alia*, a container adapted to be supported on an upper level of the building, the container including a plateau that can be extended from the building; and a tube housed in a folded position in the container when in a non-functional position, wherein the tube can be moved from the non-functional position to a functional position to form a rescue channel leading from the upper level of the building to ground level; and the tube has a number of transversal rings spaced from each other in a longitudinal direction of the tube, and each of the transversal rings is provided with at least one opening for permitting passage of the tensioning rope. Each transversal ring is provided with an annular air cushion which is inflatable in the manner of an airbag when the tube is moved to the functional position, and the air cushions function to provide for safe conveyance of people through the rescue channel to the ground level by braking transfer of the people through the rescue channel.

As will be demonstrated below, none of the applied prior art references discloses an evacuation device including annular air cushions that are folded together in the non-functional position and are inflatable, when the tube is deployed in the functional position.

Moreno (U.S. Patent No. 4,122,934) discloses an apparatus including a tubular arrangement 3 (see Fig. 1) having at least one extensible chamber 6 filled with gas under pressure. The extensible chamber is associated with an automatic inflating device for regulating the pressure in the chamber(s) 6. However, Moreno lacks several features of new independent claim 23 such as a container including a plateau that can be extended from the building, a tube that is housed in a folded position in the container when in a non-functional position, and a tensioning rope for determining the arrangement of the tube in the functional position. Furthermore, the tubular structure of Moreno

does not include the claimed transversal rings which each include an opening permitting passage of the tensioning rope and an annular air cushion.

Facey (GB 2 124 168) discloses a fire escape including telescopic body sections 3, 4 which are relatively slidable between an inoperative position (Fig. 1) and an operative position (Figs. 2-4). In the operative position, a tubular escape chute 10 is deployed through aperture 9 to ground level. The chute 10 includes webs 12 for limiting the speed of descent of persons sliding down the chute. A rope 15 is attached to section 3 and can be lowered through the aperture 9 and down inside the chute. However, the Facey fire escape lacks a plurality of longitudinally-spaced transversal rings each having an opening for permitting passage of a tensioning rope and an annular air cushion that is inflatable in the manner of an airbag when the tube is moved to the functional position.

Goble (U.S. Patent No. 192,500) discloses a fire escape including a tube contained in a receptacle. Although the tube is stored in collapsed state in the receptacle (Fig. 2), it is deployed in an angled position in the functional position (Fig. 1). Clearly, Goble lacks at least the transversal rings, the plateau, and the annular air cushions of claim 23.

The Examiner takes the position that **Horsky** (U.S. Patent No. 3,464,529) teaches air cushions that could be employed in the Moreno tubular arrangement 3 to reduce the speed of the descent of a user. Horsky, however, discloses a fruit handling device provided with a decelerating member 14 having decelerating elements 46 comprising a plurality of pneumatically “inflated” bladders 51. An air valve 107 controls the chamber pressure and the degree of constriction provided by boundary walls 104. It is not clear how such an arrangement would be employed in

the Goble fire escape; however, the resulting structure would lack the transversal rings, the plateau, and the annular air cushions of claim 23.

Nir (U.S. 2005/0161286) discloses a rescue system including a helical sleeve 24 which is stored in a collapsed position in storage compartment 12. However, Nir lacks the claimed plateau, the transversal rings and the annular air cushions required in claim 23.

Marcus (U.S. Patent No. 386,253) discloses a fire escape including a chute A that is contained in a box J located near a window. Clearly, Marcus lacks at least the plateau, the transversal rings, and the annular air cushions required in claim 23.

Nordtvedt (U.S. Patent No. 4,595,074) discloses an escape device including a stocking or chute 10, annular reinforcing elements 11 that are spaced apart along the length of the stocking. The reinforcing elements 11 are connected to each other by lines 12, 13 which pass through fastening rings 14 on the individual reinforcing elements 11. Thus, Nordtvedt clearly lacks at least the container, the plateau, and the annular air cushions of claim 23.


In view of the presentation of new independent claim 23, and the above discussion, it is submitted that claim 23 is clearly allowable over the prior art of record. Further, claims 24-32 depend, directly or indirectly, from claim 23 and are therefore allowable at least by virtue of their dependencies.

In view of the above, it is submitted that the present application is now clearly in condition for allowance. The Examiner therefore is requested to pass this case to issue.

In the event that the Examiner has any comments or suggestions of a nature necessary to place this case in condition for allowance, then the Examiner is requested to contact Applicant's undersigned attorney by telephone to promptly resolve any remaining matters.

Respectfully submitted,

Werner HAFLIGER

By: 
Michael S. Huppert
Registration No. 40,268
Attorney for Applicant

MSH/kjf
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
December 24, 2008

Version with Markings to
Show Changes Made

DEVICE FOR EVACUATING PEOPLE FROM A BUILDING
for evacuating people from a building

BACKGROUND OF THE INVENTION

_____The present invention concerns a device for evacuating people from a building ~~according to the generic term of claim 1.~~

_____A device of this type is known for example from DE-A-41 08 979, which discloses an inflatable, slanting rescue chute, in which a closed ring of longitudinally-extending tubes can be brought from a non-functional position by inflating the tubes into a functional position in which it forms a rescue channel leading from an upper storey of the building to ground level. This rescue chute is unsuitable for evacuation from high buildings, since there is usually too little space for the rescue chute in view of the angle of inclination necessary for the safe conveyance of people. Also, problems of flexural strength of the tube increase with the length of the slide.

_____The present invention is based on the problem of creating a device of the aforementioned type which enables rapid and safe evacuation even from high buildings.

~~This problem is solved according to the invention by a device with the characteristics of claim 1.~~

~~Other preferred embodiments of the device according to the invention form the subject matter of the dependent claims.~~

SUMMARY OF THE INVENTION

_____ Because the part forming the rescue channel is in the form of a tube which is folded together in the non-functional position, which when unfolded into the functional position is disposed essentially vertically or at a slight angle to the building wall, ~~whereby wall.~~ ~~—b~~Braking means are provided for the safe conveyance of people through the rescue channel to ground level, ~~level.~~ ~~The~~ the device of the invention can be used for rapid evacuation, even from very high buildings. In an especially preferred embodiment of the braking means in the form of an annular air cushion which is inflatable in the manner of an airbag on the inside of the tube, people can be conveyed ~~—one after another—~~, on after another, through the rescue channel which runs essentially vertically, thereby sliding through the individual air cushions, without there being any freefall.

BRIEF DESCRIPTION OF THE DRAWINGS

_____ The invention is next explained in more detail with the aid of the accompanying drawings, in which show:

_____ Fig. 1 ~~shows—~~ an embodiment of a device according to the invention in a non-functional position; and

Fig. 2 is a partial sectional view of the device in a functional position ~~in partial sectional representation.~~

DETAILED DESCRIPTION OF THE INVENTION

_____ Figures 1 and 2 show a device 1 for the evacuation of people from a building 2, which is housed, in a non-functional position (see Fig. 1) ~~shown in Fig. 1~~ in an enclosure 3, which is in an upper storey of the building 2. The device 1 is

thereby disposed on a plateau 4 which can be partially extended outwards from the enclosure 3 or from the building 2.

____ Fig. 2 shows the plateau 4 in the position projecting from the building 2, which is also indicated by a dotted line in Fig. 1. The plateau 4 is provided with a base opening 5, which is kept closed in the non-functional position ~~according to Fig. 1~~ by means of a flap 6, and which is disposed in the area of the plateau 4 which can be extended out of the building 2.

____ The device 1 comprises a tube 7 which folds together in the manner of a concertina, which is equipped with a number of transversal rings distributed over its length at a distance from each other. The transversal rings 10 are pressed close together when the tube is in the folded position, as can be seen ~~in from~~ Fig. 1. The tube 7 is connected at one end with an entrance part 13 displaying an entry opening 12 and disposed with the other end in front of the base opening 5 of the plateau 4. The folded tube part, equipped with transversal rings 10 and the axis of the entry opening 12 in the non-functional position, are disposed parallel to the plateau 4, i.e. horizontally.

____ The transversal rings 10 are each provided with at least one opening, indicated in Fig. 2 by reference number 15. A tensioning rope 16 ~~is~~ passed through the openings 15 of the individual transversal ~~rings 10, said rings 10.~~ The rope ~~extend~~extending between two fixed points 17, 18, one of which is disposed in the rear area of the enclosure 3 (~~seeef~~ Fig. 1) and the other is assigned to ground level 20 (Fig. 2).

____ The tensioning rope 16 is passed over the upper side of a tensioning and transport device 26. The tensioning and transport device 26, resting on the plateau 4, comprises two wheels 24, 25 and a transport chain 27 driven by ~~said wheels, said the wheels.~~ The chain co-operating cooperates with the transversal rings 10 of the tube 7. In the non-functional position of the device 1 shown in

Fig. 1, the tensioning rope 16 is not under tension and is advantageously passed within a groove 21 along the building wall 22. When the plateau is extended, the ~~this~~ tensioning rope 16, which is fixed to the fixed points 17, 18, is torn out of the groove 21 and brought into an extended position approximately parallel to the building wall 22.

_____ In order to evacuate people from a building 2 in an emergency, the plateau 4 provided in the enclosure 3, together with the tensioning and transport device 26 disposed thereon, is extended outwards into the position shown in ~~Fig. 2,~~ Fig. 2. ~~The whereby the~~ building wall 22 at this point is formed by a wall element 23 or similar disposed on the plateau, ~~and whereby~~ this wall element 23 effects an opening in the building wall when the extension of the plateau occurs. When extension occurs, moreover, the tensioning rope 16 is ripped out of the groove 21 on the building front and is tensioned between the reference points 17, 18 by the roller 24 which moves with the plateau 4.

_____ As soon as the plateau 4 has been extended and has reached its end position, the flap 6 is also automatically pivoted down and the base opening 5 in the plateau 4 is opened, and the tube 7 falls ~~under the influence of gravity,~~ under the influence of gravity, downwards through ~~the~~ this base opening 5 and unfolds itself automatically. Thereby the transversal rings 10 slide along the tensioning rope 16. Alternatively, two ~~(or the~~ tensioning ropes 16 can be provided, and; preferably each transversal ring 10 is provided with two opposing openings 15 for receiving and ~~the~~ there are two tensioning ropes 16 ~~provided~~). The tube 7 is held fast at the upper end by the entrance part 13 resting on the plateau 4, which has been brought into this position, in which the entry opening 12 is disposed co-axially with the base opening 5, with the aid of the tensioning and transport device 26. Thus, the tube 7 which has been let down forms a rescue channel 29 leading down from the upper floor to ground level 20.

Each transversal ring 10 is assigned, on the inside of the tube 7, an annular air cushion 30 which is inflatable in the manner of an airbag, which is automatically inflated when the tube 7 is let down. The air cushions 30 form the braking means for the people ~~being to be~~ conveyed through the tube 7 and prevent any freefall in the practically vertical tube arrangement. The people entering the tube 7 through the entry opening 12 slide, one-by-one, ~~one by one~~ from one air cushion 30 to the next. The elastic flexibility of the air cushions 30 in radial and axial direction allows the braked passage of people of varying heights and sizes, respectively.

At the lower end of the tube 7 there can be attached, as shown in Fig. 2, ~~as can be seen from Fig. 2~~ an ~~essentially~~ arched exit part 31, which is not equipped with any more braking means, and which facilitates a rapid exit.

Instead of the annular air cushions 30, which are inflatable in the manner of an airbag, other braking means for the safe conveyance of people are possible. ~~For Thus~~ for example, air blown from a fan into the tube from below could guarantee the necessary braking resistance.

The tube 7 preferably consists of a flame-resistant and heat-insulating material, so that even in the event of a fire, there is no risk to people being conveyed through the tube. Another possibility would be the application of a transparent material for better supervision of the evacuation process or windows could be provided ~~else to provide windows~~ in the tube.

An essential advantage of the device according to the invention lies in its independence from the building infrastructure, e.g. from electrical power.

The plateau 4 can advantageously form a part of a container which can be extended out of the building 2, in which the entire device is housed in the non-functional position. ~~position, whereby this~~ The container is not visible on the

building 2 from the outside. Several such devices per storey and devices in several stories could be provided.